PAMS Technical Documentation
RAE-3 Series PDA

6. Service Tools

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AMENDMENT RECORD SHEET

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Module Jig MJS–14

The module jig MJS–4 is used for RAE–3 module testing and repairing. There are slots for each module in the jig. The jig includes connections for charger, power supply, external RF, audios and FBUS/MBUS. Slots for Memory card and SIM card are also included. This equipment is powered by a laboratory source.

Product Code

Module Jig MJS–14: 0770175

Views of MJS–14

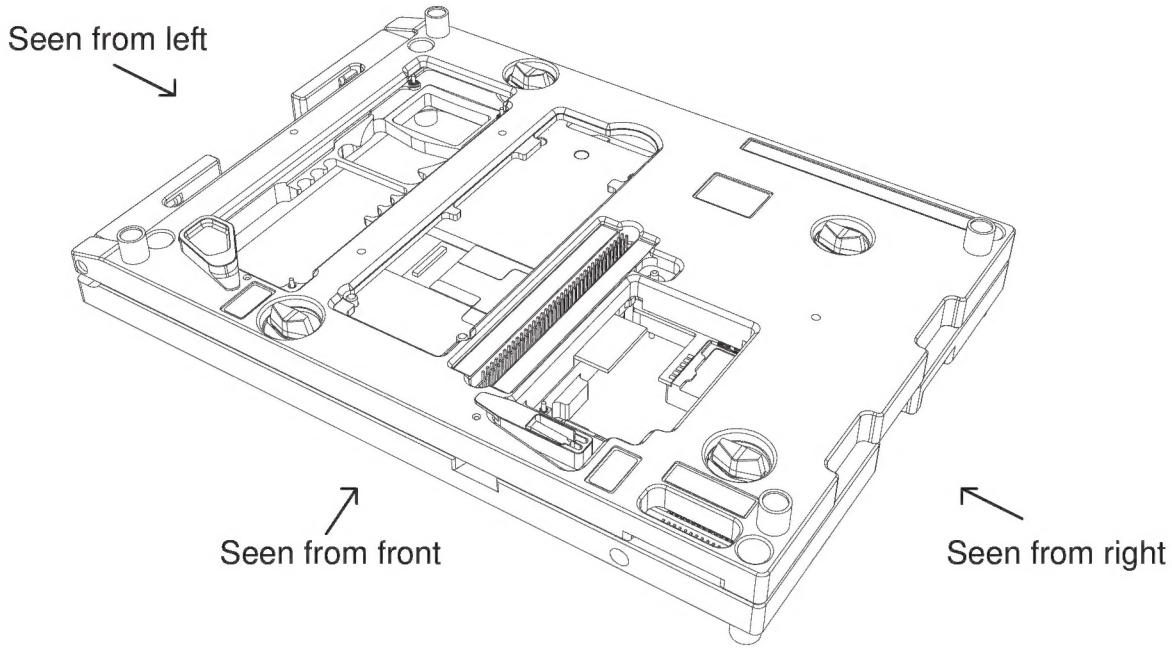


Figure 1. MJS–14, the frontside

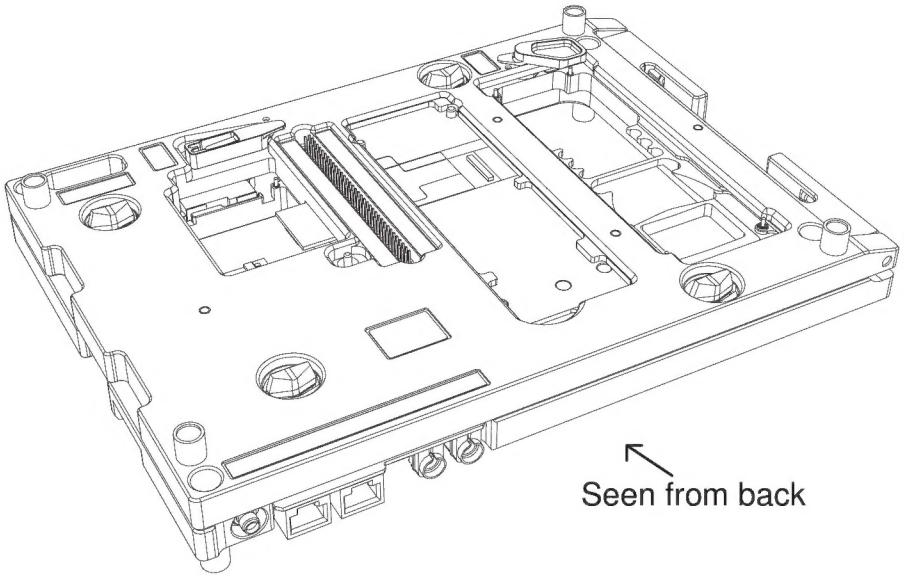


Figure 2. MJS–14, the backside

Note: The nominal supply voltage for MJS–14 is +4.0 V.
The supply voltage must not exceed +4.1 V.

User Guide for MJS-14

Warnings:

High Voltage

There is a 1kV high voltage solder point beside left upper corner of PDA display. Keep the cover always on the dangerous area unless measuring under the PWB.

Power Source

Do not connect negative voltage to Voltage IN –terminals.

Do not connect voltages over 4,2 volts to Voltage IN –terminals.

Flash Mode vs. EPOC Running –mode

If you are using Wintesla service software (for flashing or for testing) do not use the ”Run EPOC” switch. EPOC software is not allowed to be running during flashing or while software resets are possible (Wintesla connected).

External Connections

RF

For external RF connection there is a SMA jack connector. The connection is defined to be made with service cable XRF–1.

Attenuation of the RF connection (without XRF–1 cable) is
appx. 0,2dB for 900MHz band and
0,4dB for 1800MHz band.

System Signals

For system signal connection (Fbus/Mbus) there is a modular 10 socket in the jig.

The socket is compatible also with modular 8 plug.
Preferred cables for system connection are XCS–4 and DAU–9S.

Audio Signals

For audio signals the jig includes also a modular 10 socket. SGND is separated from general GND although in ADS–1 service cable specificed for use with the jig those are short–circuited.

Input Terminals

For powering the jig there are two ”banana” sockets. Red one for + terminal and black for GND terminal.

Detection Switches

There are three switches by which different detections can be done. Switches are press switch type so the connection is made only while the switch is pressed.

1 S101: Head set detection

2 S102: Hook detection

3 S103: Accessory detection

Starting

Open the cover of the jig and place SIM card and microphone to their places if needed.

Then place modules of RAE–3 to proper positions: first bl8 / kl8 then in order jc4 (board to board adapter), ul8 (keymat on it if needed) and (keymat under if needed) dl2 / dl1. Give special attention to connections of board to board connectors, connectors are not specified for continuous removing.

Close the cover of the jig.

Turn the jig over.

Connect the flex to UI module.

Place memory card and/or audio holder under its/their covers.

Connect the necessary cables. Jig is ready for use.

Power ON

There are two working modes in jig:

Default State

Entering to default state does not require any user actions. Just turn the power of the source ON. EPOC software will not run. There is a notification about the state in PDA display. Wintesla service software can be used with jig, different kind of test cases will work (PDA display test, MMC test, etc.).

EPOC Running State

”Run EPOC” switch is needed to be pressed down while turning the power ON. The switch can be released after the SW has started to boot up. EPOC software will now run.

In Use

For simulation of cover open / cover closed there is a magnet toggle on cover of the jig. Sticker beside the toggle describes the meaning of positions. The magnetic force (field strength) is a bit weaker than in Linda communicator.

There are extra GNDs included to jc4 board to board adapter. There is also a special GND pin in middle of the jig.

Finishing

Before turning the main source off press the nail in audio cover to make an interrupt to processor. This is important especially if you have an active call ON or data transfer going to/from memory card (or serial flash). After pressing the nail down turn the source off within 5 seconds (while PDA display is blanked if cover open).

Note: Check whether the SW version of the device under test supports this function (battery removal interrupt).

Signals in Board to Board Adapter JC4

Table 1. Pin List of JC4

Pin	Name	Description	Pin	Name	Description
1	GND		36	LCDDa5	
2	DispClk	8,667MHz	37	LCDDa6	
3	DISPON		38	LCDDa3	
4	FSP		39	LCDDa10	
5	LCDDa0		40	LLClk	
6	LCD_PWR		41	GND	
7	LCDDa11		42	BATT_REM	
8	GND		43	SPKP	
9	GenSDIO		44	SPKP	
10	LCDPWM		45	SPKN	
11	GenSClk	2,16MHz/3,25MHz	46	SPKN	
12	LCDEN		47	EARN	
13	KBLIGHTS		48	EARP	
14	LCDRSTX		49	Col0	
15	FLVPP		50	Row0	
16	VPROG		51	Col9	
17	VBB		52	Row9	
18	LCDM		53	Col8	
19	LCDDa8		54	Col4	
20	LCDDa4		55	Col5	
21	GND		56	Col6	
22	LCDDa7		57	Row6	
23	LCDDa9		58	Row8	
24	LCDDa2		59	Col3	
25	GND		60	Col2	

Table 1. (continued) Pin List of JC4

Pin	Name	Description	Pin	Name	Description
26	LCDDa1		61	Col7	
27	VB		62	Col1	
28	VB		63	Row5LCDCD	
29	VB		64	Row4	
30	GND		65	Row3	
31	BackPWM		66	–	
32	Row5LCDCD		67	Row2	
33	Col4		68	Row7	
34	GND		69	Row1	
35	Col3		70	GND	

Flash Prommer FPS-8 (Sales Pack)

The Flash Prommer FPS–8 is used to update the main software of the phone. Updating is done by first loading the new MCU software from the PC to the flash prommer, and then loading the new SW from the prommer to the phone. When updating more than one phone in succession, the MCU software only needs to be loaded to the prommer once.

The FPS–8 sales pack **0080321** includes:

Item:	Service accessory:	Type	Product code:
1	Flash Prommer	FPS–8	0750123
2	AC/DC Adapter FRIWO		0680032
3	D9 – D9 Cable (between PC and FPS–8)	AXS–4	0730090
4	Printer Cable		0730029
5	Installation software for FPS–8		

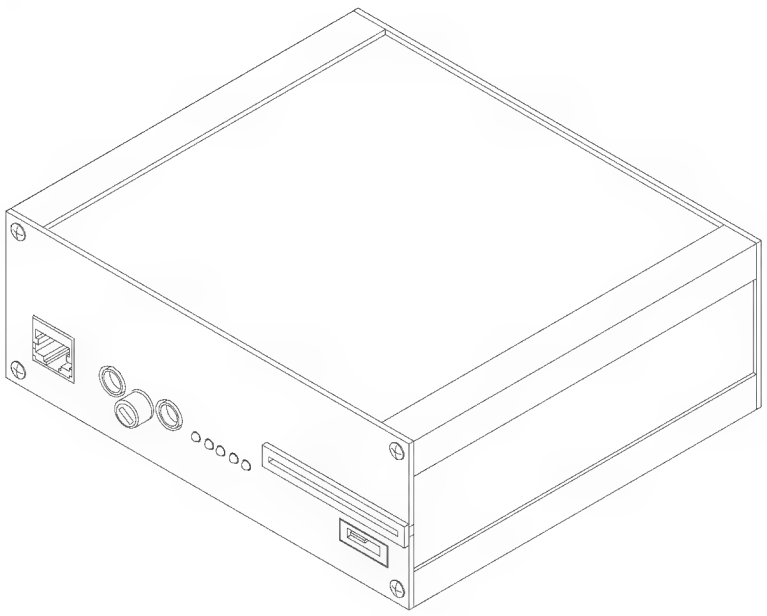
The following additional memories/modules are separately available for FPS–8:

– Additional SRAM module (8MB)	SF12	0080346 (optional)
– Additional Flash Module (64MB)	SF13	0080347 (optional)

Product Code

Flash Prommer FPS–8:	0750123

View of FPS-8



Calibration Unit JBE-2

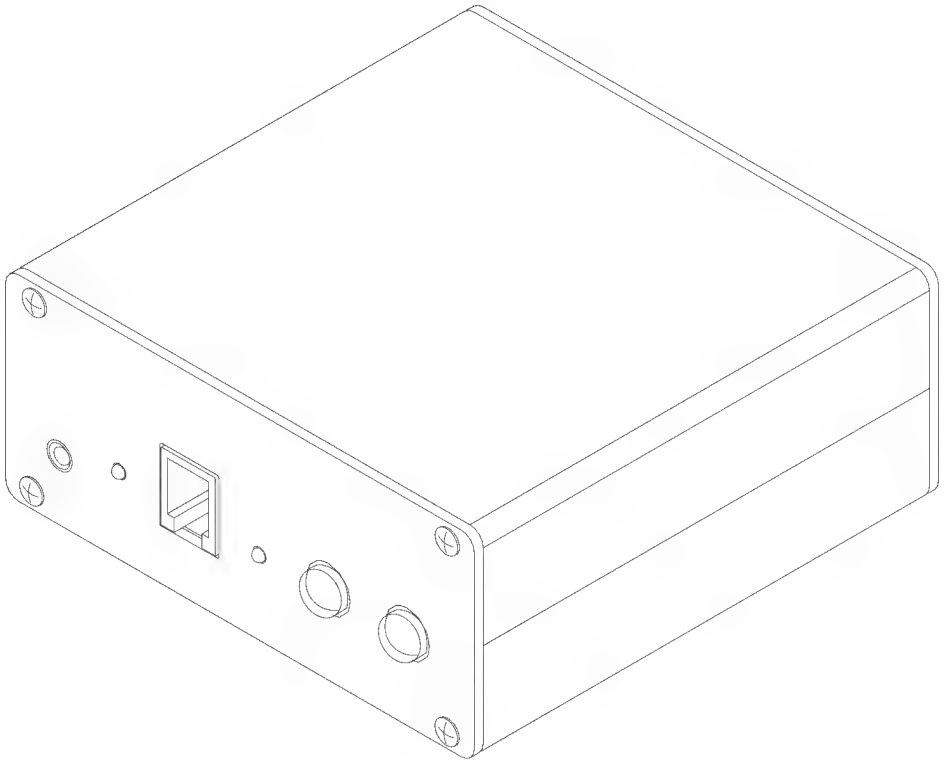
Calibration Unit JBE–2 is needed for the resistance, current– and voltage calibrations of a RAE–3 Communicator. These calibrations are needed so that the charging situation would be precise enough.

NOTE:
The JBE–2 is also the voltage source for the BBL–3B service battery. JBE–2 is the only service equipment which can provide enough current for any service case. Power output of FPS–8 flash prommer can not provide enough current in cases of tuning and calling and is ment to be used only for flashing purposes.

Product Code

Calibration Unit JBE–2:	0775290

View of JBE–2



User Guide for JBE-2

Service Operations

Needed equipment: a laboratory source, a calibration unit JBE–2, a service battery BBL–3B and a service cable DAU–9C.

Use the JBE–2 calibration unit as a power source for the phone. It is the only service tool which can provide needed currents in any service case. The JBE–2 is powered by a laboratory source. Used voltages are 8,0 volts for normal service and 10,5 volts for energy management calibrations. DO NOT connect over 12 volts voltage to JBE–2.

With Wintesla service software use service cable DAU–9C. Connect the cable straight from the PC serial port to the system connector of the phone.

Power Management Calibrations

Needed equipment: a laboratory source (min 2A out), a calibration unit JBE–2, a service battery BBL–3B, a service cable DAU–9C and a service cable SCB–3.

Use JBE–2 calibration unit as a source for the phone as described in above section. Put up the whole calibration environment and turn the phone ON before starting the Wintesla service software. Notice that the less the phone consumes current during calibration the more accurate is the result. So you are advised to do the calibrations while PDA display is off (phone SW reset while cover closed).

Service Car Kit HCL-1

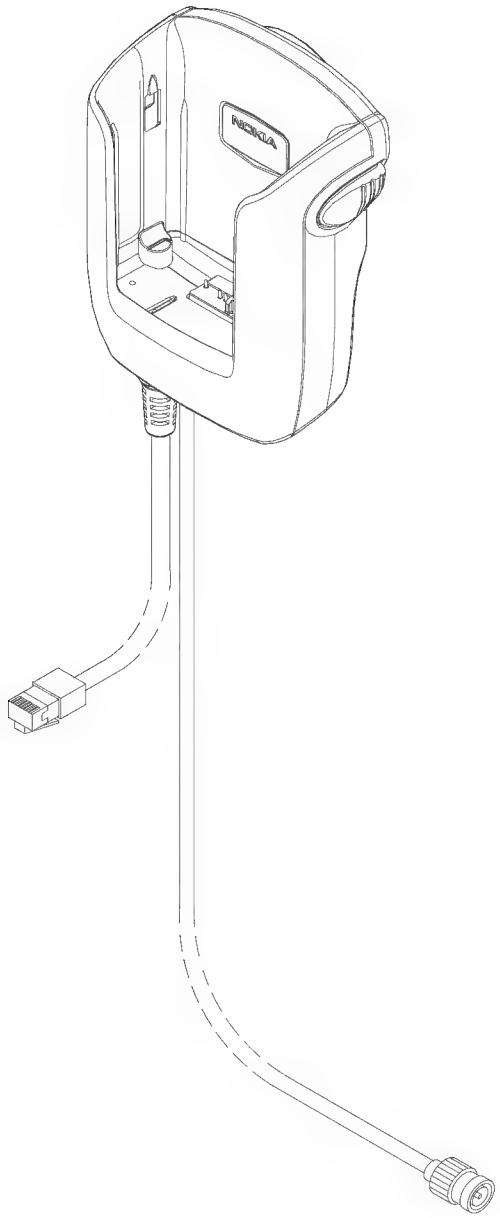
The Service Car Kit, HCL–1 is used for RF tuning of a RAE–3 communicator. HCL–1 is modified from CRM–1 car kit. HCL–1 is used as interface between RAE–3 and service software (Wintesla) while doing RF tuning and power management.

Note 1: Other needed accessories for RF tuning are Modular T adapter and DAU–9S.

Product Code

Service Car Kit HCL–1:	0770265

View of HCL-1



User Guide for HCL-1

Connection to Service SW

A service car kit HCL–1 is used with a Wintesla service software. Needed accessories are Modular–T–adapter and DAU–9S cable. With these accessories the MBUS is connected straight from the phone to the PC and the necessary level transformations are executed.. It is also possible to plug the mod8 connector straight to mod10 socket of FPS–8 prommer and control the phone through it.

Note that it is not allowed to power the service battery from power outputs of FPS–8 while using HCL–1.

Allowed Power Sources

BBL–3B service battery is the one for RF tuning. You will also need the JBE–2 as power source for the battery. The service battery can also be connected straight to laboratory power source. Do not connect a voltage higher than 4,2V to service battery. There is no advanced high voltage protection in the battery so you really can damage the phone with voltage too high.

Note: Do not use normal battery BLL–3 while connected to service SW.

About Tuning

Complete instructions how to make the RF tuning itself can be found from service manual. Remember that connectors and coaxial cable of HCL–1 will cause attenuation to signal approximately as follows:

900MHz band	0.65dB
1800MHz band	1.05dB

Note that values may vary a bit from device to device. If you have the equipment to define the exact attenuation values for your HCL–1 you are advised to do so.

Note also that the attenuation value is programmed to some tuning equipment with positive sign and to some with negative sign (depending on the device model / manufacturer).

Dummy Service Battery BBL-3B

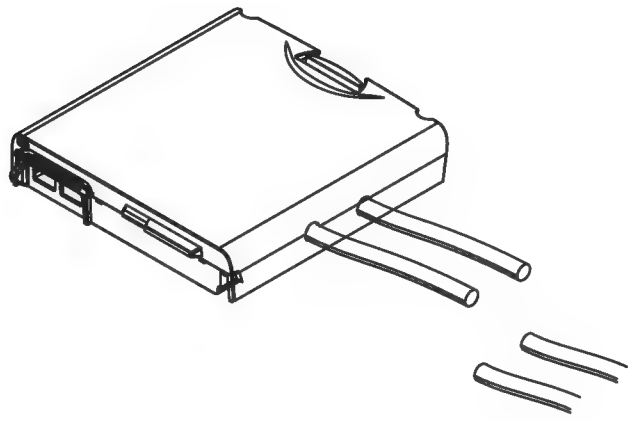
The Dummy Service Battery BBL–3B (with banana clips) is used in place of the communicator's normal battery during service to supply a controlled operating voltage from FPS–8 when flashing the communicator.

NOTE: Do not connect BBL–3B straight to a voltage source.

Product Code

Dummy Service Battery BBL–3B: 0770206

View of BBL-3



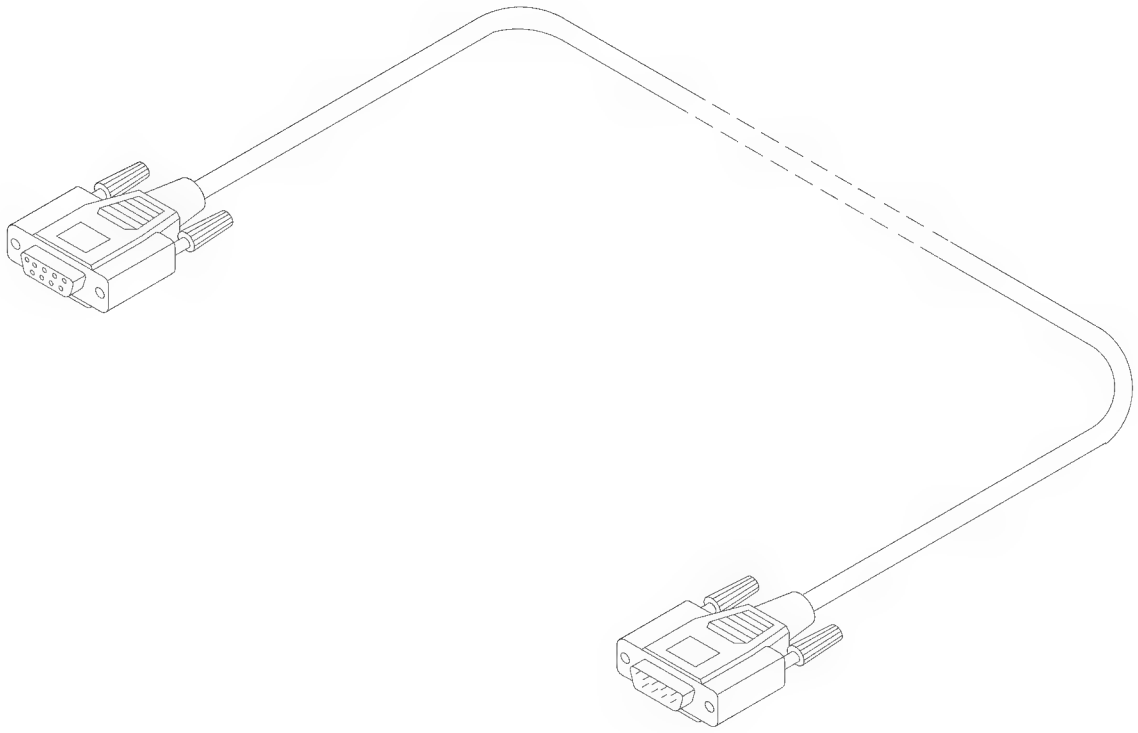
D9-D9 Cable AXS-4

The D9–D9 Cable AXS–4 is used to connect two 9 pin D connectors. e.g. between PC and FPS–8 flash prommer.

Product Code

D9 - D9 Cable AXS-4: 0730090

View of AXS-4



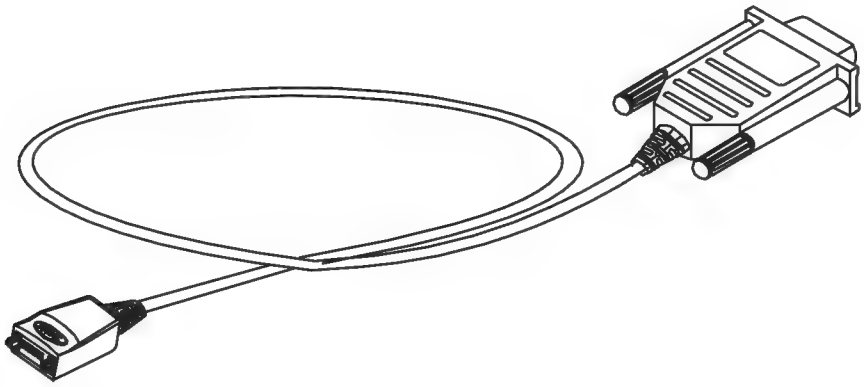
MBUS Cable DAU–9C

The MBUS Cable DAU–9C has a phone system connector and D9 female. The DAU9C is MBUS/FBUS interface cable between the phone and PC RS–232 interface.

Product Code

MBUS Cable DAU–9C: 0730138

View of DAU–9C



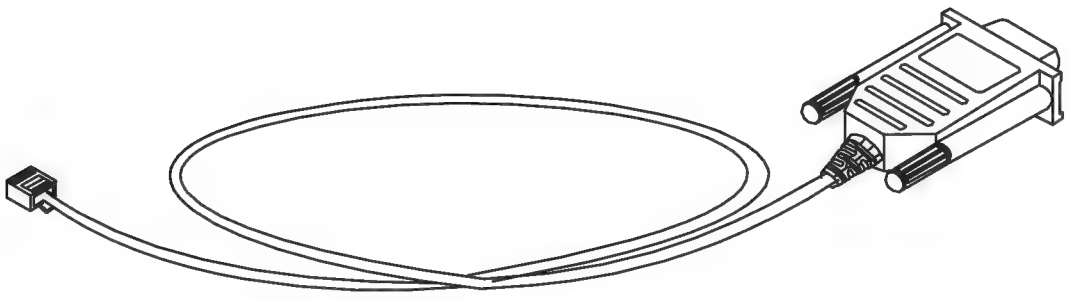
MBUS Cable DAU-9S

The MBUS Cable DAU–9S has a modular connector, and is used between PC and the modular T–adapter.

Product Code

MBUS Cable DAU–9S: 0730108

View of DAU-9S



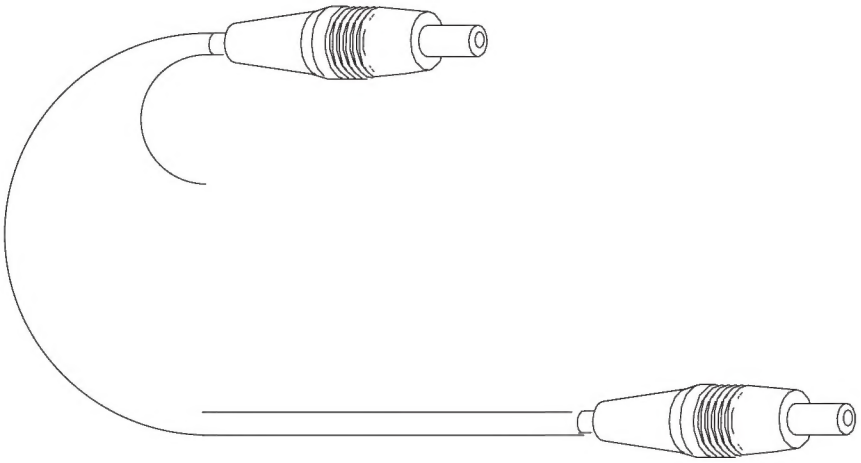
DC Cable SCB–3

The DC Cable SCB–3 is used to connect the Calibration unit, JBE–1 to the charger connection Vin of the phone when doing the charger calibration service procedure.

Product Code

DC Cable SCB–3: 0730114

View of SCB–3



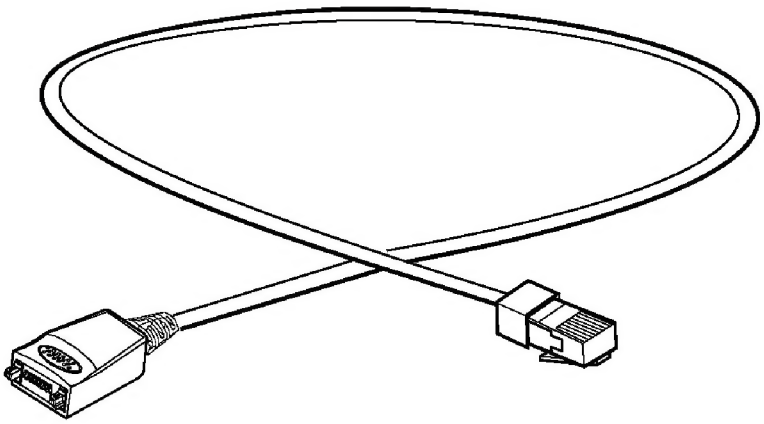
Service Cable SCH-8

The Service Cable SCH–8 is used between the phone and FPS–8 and it can used between the phone and modular T–adapter.

Product Code

Service Cable SCH–8: 0730137

View of SCH-8



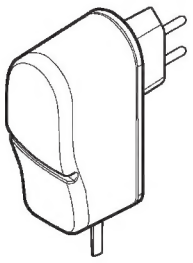
Power ACH-6

There are several variants of ACH–6 DC Power sources available:

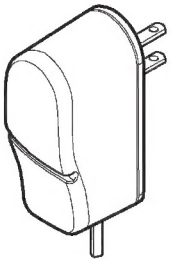
Product Code

Name of unit	Usage area	Material code
ACH–6E	Europe	0675084
ACH–6U/J	U.S.A / Japan	0675085 / 0675140
ACH–6A	Australia	0675086
ACH–6X	UK / Hong Kong	0675087

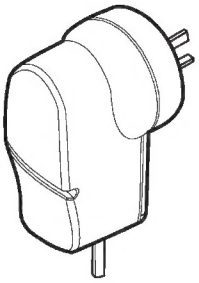
Views of ACH-6



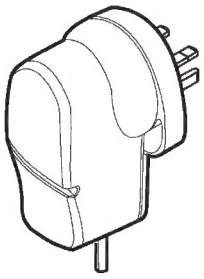
ACH–6E
Euro



ACH–6U
USA



ACH–6A
Australia



ACH–6X
UK

SW Security Device PKD-1

SW security device is a piece of hardware enabling the use of the service software when connected to the parallel (LPT) port of the PC. Without the dongle present it is not possible to use the service software. Printer or any such device can be connected to the PC through the dongle if needed.

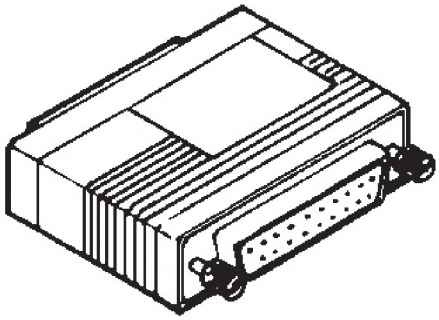
Caution: Make sure that you have switched off the PC and the printer before making connections!

Caution: Do not connected the PKD-1 to the serial port. You may damage your PKD-1!

Product Code

SW Security Device PKD-1: 0750018

View of SW Security Device



G0750018

Modular T–adapter

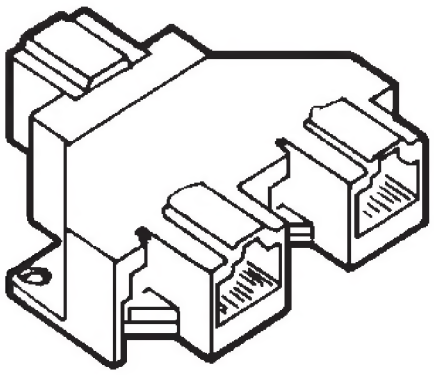
The modular T–adapter is a suitable branching unit to provide the needed parallel modular connections.

It is used between the Service Car Kit HCL–1 and DAU–9S.

Product Code

Modular T–adapter: 4626134

View of Modular T–adapter



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